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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,538	05/27/2005	Andrew James Goodwin	MSP617NAT2	2274

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EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/09/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/09/2007.

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patents.admin@dowcorning.com

Office Action Summary

Application No.

10/510,538

Applicant(s)

GOODWIN ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-17 is/are rejected.
- 7) ☒ Claim(s) 9,10 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/07/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Claim Analysis

Applicant claims a method that involves oxidizing a "liquid precursor" in a "non-thermal" plasma. For the purpose of evaluating the claims against the prior art, the former is taken to mean the precursor from which the metal(loid) oxide is derived exists in a liquid state *when it is introduced into the plasma*. That is to say, there are prior art disclosures wherein the compound that is employed in a plasma process is a liquid under ambient conditions but it is converted to a vapor form and forwarded to the reacting apparatus using a carrier gas. The Examiner is of the belief that this is not intended to be within the scope of Applicant's claims. Indeed, in the Examples of the present Specification, the liquid compound is introduced into the plasma *as a liquid spray*.

As for the "non-thermal" limitation, this phrase is interpreted as requiring that there be no source of thermal energy whatsoever, including the plasma itself, present in the reaction apparatus. This is to be distinguished from a "cold" plasma, for instance, which is not necessarily a plasma that operates/exists at room temperature but, rather, operates at cooler temperatures than do most, i.e. below several thousand degrees.

Claims 11-13 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product

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was made by a different process" *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Billet et al., U.S. Patent # 4,960,850. The polysiloxane contemplated by claim 13 is nothing more than a polydiorganosiloxane of which Billet teaches one of thousands of examples. That the claimed product is made by a different process is of no consequence to its patentability.

Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Troicky et al., DE 3500080. Troicky describes the preparation of nanosized silica particulate by passing tetraethoxysilane vapor through a cold plasma.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article entitled "Plasma Spray Synthesis of Nanomaterial

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Powders and Deposits" authored by Karthikeyen et al. and published in *Material Science and Engineering* (1997), pg 275-286 in view of Bessho, JP 11-198281 (hereinafter '281) and/or JP 11-256338 (hereinafter '338).

The primary reference discloses a method of making specified metal oxides utilizing a process wherein liquid precursors in atomized form are introduced into an oxidizing high temperature spray jet plasma whereupon the liquid compound is oxidized and pyrolyzed thereby providing a metal oxide powder in a collection chamber referred to as an "electro-static precipitator".

The claims, of course, stipulate that the plasma must be one of a non-thermal variety and the primary reference does not contemplate a non-thermal plasma.

The Bessho references teach the preparation of metal oxide- and silica-coated substrates in '281 and '338 respectively. The method employed by each entails creating a fluid stream of gas-entrained organometal liquid or organosilicon liquid in a carrier gas and introducing the fluid stream into an oxidizing plasma operated under a pressure that appears to depend on the identity of the precursor(s), i.e. 600-1520 torr for the organosilicon precursor according to '338 (paragraph 4) and 0.1-1.0 torr for organometal precursors according to '281 (Table 1). Relevant to the present discussion, the plasma can be operated at temperatures around room temperature in both cases (see Table 1 of either reference). The '338 characterizes the plasma as a glow discharge plasma in paragraph 12. Other relevant teachings of the '281 reference are found in paragraphs 14 and 17 while relevant teachings of the '338 reference may be found in paragraphs 5, 6, and 8-10.

The skilled artisan will immediately appreciate the benefits of being able to conduct a plasma-promoted reaction under the conditions outlined by the Japanese documents due to their much lower energy requirements. Furthermore, these disclosures confirm that one of ordinary skill would have a reasonable expectation of obtaining nanosized metal oxide polymers as is the goal of the primary reference under the markedly less stringent conditions contemplated by the claims. Therefore, it would have been obvious to one of ordinary skill to modify the process and apparatus in the manner necessary to use the plasma conditions outlined by the Bessho references.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Plasma Spray Synthesis of Nanomaterial Powders and Deposits" authored by Karthikeyen et al. and published in *Material Science and Engineering* (1997), pg 275-286 and Bessho, JP 11-198281 (hereinafter '281) and/or Bessho, JP 11-256338 (hereinafter '338) as applied to claims 1-8 and 11-17 above, and further in view of O'Reilly et al., WO 2002/35576. It is noted that the Bessho references describe operating conditions wherein the plasma, particularly in the case of the '281 disclosure, is created at pressures far below, or somewhat above, atmospheric pressure. Such conditions are disadvantageous for the reasons given in O'Reilly, the inability to carry out processes in a continuous fashion. It would, therefore, be beneficial to carry out the plasma processes described by the combined teachings of Karthikeyen and Bessho under atmospheric conditions. O'Reilly remedies the problems of earlier atmospheric pressure plasma assemblies with their description of an atmospheric pressure plasma assembly that features the same attributes as are recited in claims 15-17.

Allowable Subject Matter

Claims 9, 10, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Although the second Bessho reference teaches the preparation of silicon oxide films using a glow-discharge plasma, it is the goal of the primary reference to make oxides other than silicon oxide and Bessho does not motivate the skilled artisan to replace the organometal precursors disclosed in Karthikeyen with organosilicon precursors. To do so would be, in the Examiner's estimation, nothing more than obvious to try.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 2, 2007


MARC S. ZIMMER
PRIMARY EXAMINER